



# SEQUENCE LISTING

<110> Rodriguez, Moses  
Miller, David J.  
Pease, Larry R.

<120> Human IgM Antibodies and Diagnostic and  
Therapeutic Uses Thereof Particularly in the Central Nervous  
System

<130> 1199-1-005CIP2

<140> 10/010,729

<141> 2001-11-13

<150> 09/730,473

<151> 2000-12-05

<150> 09/580,787

<151> 2000-05-30

<150> 09/322,862

<151> 1999-05-28

<150> 08/779,784

<151> 1997-01-07

<150> 08/692,084

<151> 1996-08-08

<150> 08/236,520

<151> 1994-04-29

<160> 80

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 420

<212> DNA

<213> Mus musculus

<400> 1

```
atgggatgga gatggatctt tcttttcctc ctgtcaggaa ctgcaggtgt ccattgccag 60
gttcagctgc agcagtctgg acctgagctg gtgaagcctg gggctttagt gaagatatcc 120
tgcaaggctt ctggttacac cttcacaagc tacgatataa actgggtgaa gcagaggcct 180
ggacagggac ttgagtggat tggatggatt tctcctggag atggtagtac taagtacaat 240
gagaaattca agggcaaggc cactctgact gcagacaaat cctccagcac agcctacatg 300
cagctcagca gcctgacttc tgagaactct gcagtctatt tctgtgcaag aggggccagg 360
ttctactggt acttcgatgt ctggggcgca gggaccacgg tcaccgtctc ctcagagagt 420
```

<210> 2

<211> 395

<212> DNA

<213> Mus musculus

<400> 2  
atggctgtct tggggctgct cttctgcctg gtgacattcc caagctgtgt cctatcccag 60  
gtgcagctga agcagtcagg acctggccta gtgcagccct cacagagcct gtccatcacc 120  
tgcacagtct ctggtttctc attaactagc tatggtgtac actgggttcg ccagtctcca 180  
ggaaagggtc tggagtggct gggagtgata tggagtgggtg gaagcacaga ctataatgca 240  
gctttcataat ccagactgag catcagcaag gacgcttcca agagccaagt tttctttaaa 300  
atgaacagtc tgcacgctac atatattatt gtgccagaga ctacggtagt aggggggact 360  
actgggggtca aggaacctca gtcaccgtct cctca 395

<210> 3  
<211> 423  
<212> DNA  
<213> Mus musculus

<400> 3  
atgaagttgt ggttaaaactg ggtttttctt ttaacacttt tacatggtat ccagtgtgag 60  
gtgaagctgg tggaaatctgg tggaggcctg gtacagcctg ggggttctct gagactctcc 120  
tgtgcaactt ctgggttcac cttcagtgat ttctacatgg agtgggtccg ccagcctcca 180  
gggaagagac tggagtggat tgctgcaagt agaaagaaaag ctaatgatta taaaacagag 240  
tacagtgcac ctgtgaaggg gcggttcacc gtctccagag acacttccca aagcatcctc 300  
taccttcaga tgaatgccct gagagatgag gacactgcca tttattactg tgcaagagat 360  
gcacggcagc tcgggctccc gtttgcttac tggggccaag ggactctggt cactgtctct 420  
gca 423

<210> 4  
<211> 384  
<212> DNA  
<213> Mus musculus

<400> 4  
atggaatcac agactctggt cttcatatcc atactgctct gggtatatgg agctgatggg 60  
aacattgtaa tgaccaaatc tcccaaattc atgtccatgt cagtaggaga gagggtcacc 120  
ttgacctgca aggccagtga gaatgtggtt acttatgttt cctggtatca acagaaacca 180  
gagcagctct ctaaaactgct gatatacggg gcacccaacc ggtacactgg ggtccccgat 240  
cgcttcacag gcagtggatc tgcaacagat ttcactctga ccatcagcag tgtgcaggct 300  
gaagaccttg cagattatca ctgtggacag gggtacagct atccgtacac gttccgaggg 360  
gggaccaagc tggaaataaa acgg 384

<210> 5  
<211> 402  
<212> DNA  
<213> Mus musculus

<400> 5  
atggacatga gggctcctgc acagattttt ggcttcttgt tgctcttggt tcaaggtacc 60  
agatgtgaca tccagatgac ccagtctcca tctccttat ctgcctctct gggagaaaga 120  
gtcagtctca cttgtcgggc aagtcaggac attggtagta gcttaaaactg gcttcagcag 180  
gaaccagatg gaactattaa acgcctgatc tacgccacat ccagtttaga ttctgggtgtg 240  
cccaaaaagg tcagtggcag taggtctggg tcagattatt ctctcaccat cagcagcctt 300  
gagtctgaag attttttaga ctattactgt ctacaatatg ctagttctcc gtacacgttc 360  
ggagggggga ccaagctgga aataaaacgg gctgatgctt ca 402

<210> 6  
<211> 396  
<212> DNA  
<213> Mus musculus

<400> 6  
atggagtcac agattcaggt ctttgtattc gtgtttctct ggttgtctgg tgttgacgga 60  
gacattgtga tgacccagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 120  
atcacctgca aggccagtca ggatgtgagt actgctgtag cctgggtatca acagaaacca 180  
ggacaatctc ctaaaactact gatttactcg gcatcctacc ggtacactgg agtccctgat 240  
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 300  
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcgggtgct 360  
gggaccaggc tggagctgaa acgggctgat gcttca 396

<210> 7  
<211> 119  
<212> PRT  
<213> Homo sapiens

<220>  
<221> VARIANT  
<222> (50)...(50)  
<223> Xaa can be Val or Ile

<221> VARIANT  
<222> (89)...(89)  
<223> Xaa can be Asp or Glu

<400> 7  
Gln Val Gln Leu Val Glu Ser Gly Gly Gly Val Val Gln Pro Gly Arg  
1 5 10 15  
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Ser  
20 25 30  
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
35 40 45  
Ala Xaa Ile Ser Tyr Asp Gly Ser Arg Lys Tyr Tyr Ala Asp Ser Val  
50 55 60  
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80  
Leu Gln Met Asn Ser Leu Thr Ala Xaa Asp Thr Ala Val Tyr Tyr Cys  
85 90 95  
Ala Lys Gly Val Thr Gly Ser Pro Thr Leu Asp Tyr Trp Gly Gln Gly  
100 105 110  
Thr Leu Val Thr Val Ser Ser  
115

<210> 8  
<211> 357  
<212> DNA  
<213> Homo sapiens

<220>  
<221> variation  
<222> (27)...(27)  
<223> n is a or g

<221> variation  
<222> (117)...(117)  
<223> n is g or a

<400> 8  
caggtgcagc tgggtggagtc tgggggnggc gtggtccagc ctgggaggtc cctgagactc 60  
tcctgtgcag cctctggatt caccttcagt agctctggca tgcactgggt ccgccangct 120  
ccaggcaagg ggctggagtg ggtggcagtt atatcatatg atggaagtaa taaatactat 180  
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagaa cacgctgtat 240  
ctgcaaatac acagcctgag agctgaggac acggctgtgt attactgtgc gaaagaggtg 300  
actgctattc cctactttga ctactggggc caggggaacc tggtcaccgt ctctca 357

<210> 9  
<211> 114  
<212> PRT  
<213> Homo sapiens

<220>  
<221> VARIANT  
<222> (46)...(46)  
<223> Xaa is Arg or Lys

<221> VARIANT  
<222> (90)...(90)  
<223> Xaa is Gly or Glu

<400> 9  
Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln  
1 5 10 15  
Lys Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn  
20 25 30  
Phe Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Xaa Leu Leu  
35 40 45  
Ile Tyr Asp Ile Thr Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser  
50 55 60  
Gly Ser Lys Ser Gly Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln  
65 70 75 80  
Thr Gly Asp Glu Ala Asp Tyr Tyr Cys Xaa Thr Trp Asp Ser Ser Leu  
85 90 95  
Ser Ala Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln  
100 105 110  
Pro Lys

<210> 10  
<211> 342  
<212> DNA  
<213> Homo sapiens

<220>  
<221> variation  
<222> (137)...(137)  
<223> n is g or a

<221> variation  
<222> (269)...(269)  
<223> n is g or a

<400> 10  
cagtctgtgt tgacggagcc gccttcagtg tctgctgccc caggacagaa ggtcaccatc 60

```

tcttgctctg gaagcagctc caacattggc aataattttg tatcctggta ccagcaactc 120
ccaggaacag ccccanact cctcatttat gacattacta agcgaccctc agggattcct 180
gaccgattct ctgggtccaa gtctggcacg tcagccaccc tgggcatcac cggactccag 240
actgggggacg aggccgatta ttactgcnna acatgggata gcagcctgag tgctgtggta 300
ttcggcgggg ggaccaagct gaccgtccta ggtcagccca ag 342

```

<210> 11  
 <211> 121  
 <212> PRT  
 <213> Homo sapiens

```

<400> 11
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
 1          5          10          15
Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
 20          25          30
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
 35          40          45
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
 50          55          60
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
 65          70          75          80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
 85          90          95
Arg Ser Ala Gln Gln Gln Leu Val Tyr Tyr Phe Asp Tyr Trp Gly Gln
100          105          110
Gly Thr Leu Val Thr Val Ser Ser Gly
115          120

```

<210> 12  
 <211> 370  
 <212> DNA  
 <213> Homo sapiens

```

<400> 12
caggtgcagc tgcaggagtc gggcccagga ctggtgaagc cttcgggagac cctgtccctc 60
acctgcactg tctctgggtg ctccatcagt agttactact ggagctggat ccggcagccc 120
ccaggggaagg gactggagtg gattgggtat atctattaca gtgggagcac caactacaac 180
ccctccctca agagtcgagt caccatatca gtagacacgt ccaagaacab ccagttctcc 240
ctgaagctga gctctgtgac cgctgcggac acggccabcg tgtattactg tgcgaggtcg 300
gcacagcagc agctggtata ctacdtttga ctactggggc cagggaaccc tggtcaccgt 360
ctcctcaggg 370

```

<210> 13  
 <211> 119  
 <212> PRT  
 <213> Homo sapiens

```

<400> 13
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
 1          5          10          15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
 20          25          30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35          40          45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val

```

50		55		60
Pro Asp Arg Phe Ser Gly	Ser Gly Ser Gly Thr	Asp Phe Thr Leu Thr		
65	70	75	80	
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln				
	85	90	95	
Tyr Tyr Ser Thr Pro Leu Thr Phe Gly Pro Gly Thr Lys Val Asp Ile				
	100	105	110	
Lys Arg Thr Val Ala Ala Pro				
115				

<210> 14  
 <211> 357  
 <212> DNA  
 <213> Homo sapiens

<400> 14  
 gacatcgtga tgacccagtc tccagactcc ctggctgtgt ctctgggcga gagggccacc 60  
 atcaactgca agtccagcca gagtggtttta tacagctcca acaataagaa ctacttagct 120  
 tggtagcagc agaaaccagg acagcctcct aagctgctca tttactgggc atctaccg 180  
 gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240  
 atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact 300  
 cctctcactt tcggccctgg gaccaaagtg gatatacaac gaactgtggc tgcacca 357

<210> 15  
 <211> 112  
 <212> PRT  
 <213> Homo sapiens

<400> 15	
Ala Val Val Gln Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser	
1	5 10 15
Gly Phe Ile Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Val Pro	
	20 25 30
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asp	
	35 40 45
Lys Tyr Tyr Val Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp	
	50 55 60
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu	
65	70 75 80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Gly Trp Tyr	
	85 90 95
Trp Ser Cys Asp Ser Trp Gly Gln Gly Thr Leu Val Ile Val Ser Ser	
	100 105 110

<210> 16  
 <211> 338  
 <212> DNA  
 <213> Homo sapiens

<400> 16  
 aggccgtggg ccagcctggg aggtccctga gactctcctg tgcagcgtct ggattcattt 60  
 tcagtagcta tggcatgcac tgggtccgcc aggttccagg caaggggctg gagtgggtgg 120  
 cagttatatg gtatgatgga agtgataaat actatgtaga ctccgtgaag ggccgattca 180  
 ccattctccag agacaattct aaaaacacgc tctatctgca aatgaacagc ctgagagccg 240  
 aggacacggc tgtgtattac tgtgcgagag atcgcagcag tggctggtac tggtcctgcg 300

actcctgggg ccaggaacc ctggtcattg tctcctca

338

<210> 17

<211> 117

<212> PRT

<213> Homo sapiens

<400> 17

Leu	Leu	Ser	Gly	Ser	Pro	Gly	Gln	Ser	Ile	Thr	Ile	Ser	Cys	Thr	Gly
1				5				10					15		
Thr	Ser	Ser	Asp	Val	Gly	Gly	Tyr	Asn	Tyr	Val	Ser	Trp	Tyr	Gln	Gln
			20				25					30			
His	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Met	Ile	Tyr	Asp	Val	Ser	Asp	Arg
		35					40				45				
Pro	Ser	Gly	Val	Ser	Asn	Arg	Phe	Ser	Gly	Ser	Lys	Ser	Gly	Asn	Thr
	50					55					60				
Ala	Ser	Leu	Thr	Ile	Ser	Gly	Leu	Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr
65					70				75					80	
Tyr	Cys	Ser	Ser	Tyr	Thr	Ser	Ser	Ser	Ser	Val	Val	Phe	Gly	Gly	Gly
			85					90					95		
Thr	Lys	Leu	Thr	Val	Leu	Gly	Gln	Pro	Lys	Ala	Ala	Pro	Ser	Val	Thr
			100				105						110		
Leu	Phe	Pro	Pro	Pro											
			115												

<210> 18

<211> 358

<212> DNA

<213> Homo sapiens

<400> 18

ttgcctcctg	tctgggtctc	ctggacagtc	gatcaccatc	tccctgactg	gaaccagcag	60
tgacgttggg	gggtataact	atgtctcctg	gtaccaacag	caccagggca	aagcccccaa	120
actcatgatt	tatgatgtca	gtgatcggcc	ctcagggggt	tctaategct	tctctggctc	180
caagtctggc	aacacggcct	ccctgaccat	ctctgggctc	caggctgagg	acgaggctga	240
ttattactgc	agctcatata	caagcagcag	ctctgtggta	ttcggcggag	ggaccaagct	300
gaccgtccta	ggtcagccca	aggctgcccc	ctcggtcact	ctgttcccgc	ctccaagg	358

<210> 19

<211> 120

<212> PRT

<213> Mus musculus

<400> 19

Gln	Asp	His	Leu	Gln	Gln	Ser	Gly	Pro	Glu	Leu	Val	Lys	Pro	Gly	Ala
1			5				10						15		
Phe	Val	Lys	Ile	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr	Asn	Tyr
			20				25					30			
Asp	Leu	Asn	Trp	Val	Arg	Gln	Arg	Pro	Gly	Gln	Gly	Leu	Glu	Trp	Ile
		35				40					45				
Gly	Trp	Ile	Tyr	Pro	Gly	Asn	Asp	Asn	Thr	Lys	Tyr	Asn	Glu	Lys	Phe
	50				55					60					
Lys	Gly	Leu	Ala	Ser	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Thr	Thr	Ala	Tyr
65					70				75					80	
Leu	His	Leu	Ser	Ser	Leu	Thr	Ser	Glu	Ser	Ser	Ala	Val	Tyr	Phe	Cys
			85					90						95	

Ala Arg Gly Leu Pro Arg Gly Trp Tyr Phe Asp Val Trp Gly Ala Gly  
 100 105 110  
 Thr Thr Val Thr Val Ser Ser Ala  
 115 120

<210> 20  
 <211> 360  
 <212> DNA  
 <213> Mus musculus

<400> 20  
 caggatcacc tgcagcagtc tggacctgag ctggtgaagc ctggggcctt tgtgaagata 60  
 tcctgcaagg cttctgggta caccttcaca aactacgata taaactgggt gaggcagagg 120  
 cctggacagg gccttgagtg gattggatgg atttatcctg gaaatgataa tactaagtac 180  
 aatgagaagt tcaagggcct ggccctcactg actgcagaca agtcctccac cacagcctac 240  
 ttgcatctca gcagcctgac ttctgagagc tctgcagtct atttctgtgc aagaggggta 300  
 cctaggggct ggtacttcga tgtctggggc gcagggacca cggtcaccgt ctcctcagct 360

<210> 21  
 <211> 101  
 <212> PRT  
 <213> Mus musculus

<400> 21  
 Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Met Ser Val Gly  
 1 5 10 15  
 Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Val Thr Tyr  
 20 25 30  
 Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Leu Leu Ile  
 35 40 45  
 Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly  
 50 55 60  
 Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser Ser Val Gln Ala  
 65 70 75 80  
 Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr Ser Tyr Pro Tyr  
 85 90 95  
 Thr Phe Gly Gly Gly  
 100

<210> 22  
 <211> 303  
 <212> DNA  
 <213> Mus musculus

<400> 22  
 aacattgtaa tgacccaatc tcccaaattc atgtccatgt cagtaggaga gagggtcacc 60  
 ttgacctgca aggccagtga gaatgtggtt acttatgttt cctggatatca acagaaaacca 120  
 gagcagtctc ctaaactgct gatatacggg gcatccaacc ggtacactgg ggtccccgat 180  
 cgcttcacag gcagtggatc tgcaacagat ttactctga ccatcagcag tgtgcaggct 240  
 gaagaccttg cagattatca ctgtggacag gggttacagct atccgtacac gttcggaggg 300  
 ggg 303

<210> 23  
 <211> 101



<212> PRT

<213> Mus musculus

<400> 23

Asp	Val	Gln	Ile	Thr	Gln	Ser	Pro	Ser	Tyr	Leu	Ala	Ala	Phe	Pro	Gly
1				5					10					15	
Glu	Thr	Ile	Thr	Ile	Asn	Cys	Arg	Ala	Ser	Lys	Ser	Ile	Ser	Lys	Tyr
			20					25					30		
Leu	Ala	Trp	Tyr	Gln	Glu	Arg	Pro	Gly	Lys	Thr	Asn	Lys	Leu	Leu	Ile
		35					40					45			
Tyr	Ser	Gly	Ser	Thr	Leu	Gln	Ser	Gly	Ile	Pro	Ser	Arg	Phe	Ser	Gly
	50					55					60				
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Glu	Pro
65					70					75				80	
Glu	Asp	Phe	Ala	Met	Tyr	Tyr	Cys	Gln	Gln	His	Asn	Glu	Tyr	Pro	Tyr
				85					90					95	
Thr	Phe	Gly	Gly	Gly											
			100												

<210> 24

<211> 303

<212> DNA

<213> Mus musculus

<400> 24

gatgtccaga	taacccagtc	tccatcttat	cttgctgcat	ttcctggaga	aaccattact	60
attaattgta	gggcaagtaa	gagcattagt	aaatatttag	cctggtatca	agagagacct	120
ggaaaaacta	ataagcttct	tatctactct	ggatccactt	tgcaatctgg	aattccatca	180
aggttcagtg	gcagtggatc	tggtacagat	ttcactctca	ccatcagtag	cctggagcct	240
gaagattttg	caatgtatta	ctgtcaacag	cataatgaat	acccgtatac	gttcggaggg	300
ggg						303

<210> 25

<211> 124

<212> PRT

<213> Homo sapiens

<400> 25

Glu	Val	Gln	Leu	Leu	Glu	Ser	Gly	Gly	Gly	Leu	Val	Gln	Pro	Gly	Gly
1				5					10					15	
Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Ser	Phe	Ile	Asp	Tyr
			20					25					30		
Ala	Met	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val
		35					40					45			
Ser	Ser	Leu	Ser	Gly	Asp	Ser	Gly	Ser	Ser	Tyr	Tyr	Ala	Asp	Ser	Val
	50					55					60				
Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ser	Lys	Ser	Thr	Val	Phe
65					70					75				80	
Leu	Gln	Leu	Ser	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys
				85					90					95	
Ala	Gln	Glu	Thr	Gly	Pro	Gln	Arg	Arg	Trp	Gly	Gln	Gly	Thr	Leu	Val
			100					105					110		
Thr	Val	Ser	Ser	Gly	Ser	Ala	Ser	Ala	Pro	Thr	Leu				
		115					120								

<210> 26  
 <211> 372  
 <212> DNA  
 <213> Homo sapiens

<400> 26  
 gaggtgcaac tattggaatc tgggggagggc ttggtacagc ctgggggggtc cctgagactc 60  
 tcctgtgcag cctctggatt cagctttatc gactatgccca tgagctgggt ccgccaggct 120  
 ccaggggaagg gactggagtg ggtctcaagt cttagtgggtg atagtggtag ttcataattat 180  
 gcagactccg tgaagggccg attcaccatc tccagagaca attccaagag cacgggtgttt 240  
 ctgcaactga gcagcctgag agccgaggac acggccatat attactgtgc gcaggagacc 300  
 ggtccccagc gtcgctgggg ccaggggaacc ctggtcaccg tctcctcagg gagtgcattcc 360  
 gccccaaccc tt 372

<210> 27  
 <211> 116  
 <212> PRT  
 <213> Homo sapiens

<400> 27  
 Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly  
 1 5 10 15  
 Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ser Trp  
 20 25 30  
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
 35 40 45  
 Tyr Lys Ala Phe Asn Leu Glu Ser Gly Val Pro Ser Arg Phe Arg Gly  
 50 55 60  
 Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80  
 Asp Asp Ser Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Ser Tyr Pro Leu  
 85 90 95  
 Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys Arg Thr Val Ala Ala  
 100 105 110  
 Pro Ser Val Phe  
 115

<210> 28  
 <211> 348  
 <212> DNA  
 <213> Homo sapiens

<400> 28  
 gacatccaga tgacccagtc tccttccacc ctgtctgcat ctgtagggga cagagtcacc 60  
 atcacttgcc gggccagtca gagtattagt agctgggttg cctggtatca gcagaaacca 120  
 gggaaagccc ctaaaactcct gatctataag gcgtttaatt tagaaagtgg ggtcccatca 180  
 aggttcagag gcagtggctc tgggacagaa ttcactctca ccatcagcag cctgcagcct 240  
 gatgattctg caacttatta ctgccagcag tatagtagtt accccctcac tttcggcgga 300  
 gggaccaagg tggacattaa acgaactgtg gctgcacat ctgtcttc 348

<210> 29  
 <211> 106  
 <212> PRT  
 <213> Homo sapiens

<400> 29

Arg	Lys	Glu	Ala	Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr
1				5					10					15	
Phe	Thr	Gly	Tyr	Tyr	Met	His	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly
		20						25					30		
Leu	Glu	Trp	Met	Gly	Trp	Ile	Asn	Pro	Asn	Ser	Gly	Gly	Thr	Asn	Tyr
		35					40					45			
Ala	Gln	Lys	Phe	Gln	Gly	Arg	Val	Thr	Met	Thr	Arg	Asp	Thr	Ser	Ile
	50					55					60				
Ser	Thr	Ala	Tyr	Met	Glu	Leu	Ser	Arg	Leu	Arg	Ser	Asp	Asp	Thr	Ala
65					70					75					80
Val	Tyr	Tyr	Cys	Ala	Arg	Asp	Arg	Ser	Tyr	Pro	Gly	Arg	Asn	Tyr	Phe
			85						90					95	
Asp	Tyr	Trp	Gly	Gln	Gly	Thr	Leu	Val	Thr						
			100					105							

<210> 30  
 <211> 327  
 <212> DNA  
 <213> Homo sapiens

<400> 30  
 ccaggagaag aaacggaggc ctcaagtgaag gtctcctgca aggcttctgg atacaccttc 60  
 accggctact atatgcactg ggtgacacag gcccctggac aagggcttga gtggatggga 120  
 tggatcaacc ctaacagtgg tggcacaac tatgcacaga agtttcaggg cagggtcacc 180  
 atgaccaggg acacgtccat cagcacagcc tacatggagc tgagcaggct gagatctgac 240  
 gacacggccg tgtattactg tgcgagagat cgatcgatc cggaaggaa ctactttgac 300  
 tactggggcc aggaaccct ggtcacc 327

<210> 31  
 <211> 101  
 <212> PRT  
 <213> Homo sapiens

Glu	Ile	Val	Leu	Thr	Gln	Ser	Pro	Gly	Thr	Leu	Ser	Leu	Ser	Pro	Gly
1				5					10					15	
Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Ser
		20						25				30			
Tyr	Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu
		35					40					45			
Ile	Tyr	Gly	Ala	Ser	Ser	Arg	Ala	Thr	Gly	Ile	Pro	Asp	Arg	Phe	Ser
	50					55					60				
Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Arg	Leu	Glu
65					70					75					80
Pro	Glu	Asp	Phe	Ala	Val	Tyr	Tyr	Cys	Gln	Gln	Tyr	Gly	Ser	Ser	His
			85						90					95	
Thr	Phe	Gly	Gln	Gly											
			100												

<210> 32  
 <211> 303  
 <212> DNA  
 <213> Homo sapiens

<400> 32

```

gaaattgtgt tgacgcagtc tccaggcacc ctgtctttgt ctccagggga aagagccacc 60
ctctcctgca gggccagtca gagggttagc agcagctact tagcctggta ccagcagaaa 120
cctggccagg ctcccaggct cctcatctat ggtgcatcca gcagggccac tggcatccca 180
gacaggttca gtggcagtggt gtctgggaca gacttcactc tcaccatcag cagactggag 240
cctgaagatt ttgcagtgtg ttactgtcag cagtatggta gctctcacac ttttggccag 300
ggg 303

```

<210> 33  
 <211> 109  
 <212> PRT  
 <213> Homo sapiens

```

<400> 33
Gly Leu Val Lys Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
 1          5          10          15
Gly Phe Thr Phe Ser Asp Tyr Tyr Met Ser Trp Ile Arg Gln Ala Pro
 20          25          30
Gly Lys Gly Leu Glu Trp Val Ser Tyr Ile Ser Ser Ser Ser Ser Tyr
 35          40          45
Thr Asn Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
 50          55          60
Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
 65          70          75          80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Ser Ser Trp
 85          90          95
Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly
 100          105

```

<210> 34  
 <211> 329  
 <212> DNA  
 <213> Homo sapiens

```

<400> 34
gaggcttggg caagcctgga gggtccttga gactctcctg tgcagcctct ggattcacct 60
tcagtgacta ctacatgagc tggatccgcc aggtccagg gaaggggctg gagggtgttt 120
catacattag tagtagtagt agttacacaa actacgcaga ctctgtgaag ggccgattca 180
ccatctccag agacaacgcc aagaactcac tgtatctgca aatgaacagc ctgagagccg 240
aggacacggc tgtgtattac tgtgcgagag atcggtcgag cagcagctgg tactactact 300
actacggtat ggacgtctgg ggccaaggg 329

```

<210> 35  
 <211> 102  
 <212> PRT  
 <213> Homo sapiens

```

<400> 35
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1          5          10          15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asn Tyr
 20          25          30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
 35          40          45
Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Asn Gly
 50          55          60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro

```

65		70		75		80									
Glu	Asp	Val	Ala	Thr	Tyr	Tyr	Cys	Gln	Lys	Tyr	Asn	Lys	Cys	Pro	Ser
			85					90						95	
His	Phe	Arg	Gly	Arg	Asp										
			100												

<210> 36  
 <211> 306  
 <212> DNA  
 <213> Homo sapiens

<400> 36  
 gacatccaga tgacccagtc tccatcctcc ctgtctgcat ctgtaggaga cagagtcacc 60  
 atcacttgcc gggcgagtca gggcattagc aattatttag cctgggtatca gcagaaacca 120  
 gggaaagtcc ctaagctcct gatctatgct gcatccactt tgcaatcagg ggtcccatct 180  
 cggttcaatg gcagtggatc tgggacagat ttcactctca ccatcagcag cctgcaacct 240  
 gaagatgttg caacttatta ctgtcaaaag tataacaagt gcccctctca ctttcggggg 300  
 aggac 306

<210> 37  
 <211> 105  
 <212> PRT  
 <213> Homo sapiens

<400> 37  
 Asp Ile Ala Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly  
 1 5 10 15  
 Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Arg Ser Val Leu Phe Ser  
 20 25 30  
 Ser Asn Asn Asn Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln  
 35 40 45  
 Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val  
 50 55 60  
 Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
 65 70 75 80  
 Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln  
 85 90 95  
 Tyr Tyr Ser Thr Pro Ile Thr Phe Gly  
 100 105

<210> 38  
 <211> 315  
 <212> DNA  
 <213> Homo sapiens

<400> 38  
 gacatcgga tgacccagtc tccagactcc ctggcagtgct ctctggggcga gagggccacc 60  
 atcaactgca agtccagccg gagggtttta ttcagctcca acaataacaa ctacttagct 120  
 tggtagcagg agaaaccagg acagcctcct aagctactca tttactgggc atctaccgg 180  
 gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240  
 atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact 300  
 ccaatcacct tcggc 315

<210> 39  
 <211> 101

<212> PRT  
<213> Mus musculus

<400> 39  
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly  
1 5 10 15  
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala  
20 25 30  
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile  
35 40 45  
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala  
65 70 75 80  
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu  
85 90 95  
Thr Phe Gly Ala Gly  
100

<210> 40  
<211> 303  
<212> DNA  
<213> Mus musculus

<400> 40  
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60  
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggatatca acagaaacca 120  
gcacaatctc ctactact gatttactcg gcatcctacc ggtacactgg agtccctgat 180  
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 240  
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcgggtgct 300  
ggg 303

<210> 41  
<211> 101  
<212> PRT  
<213> Mus musculus

<400> 41  
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly  
1 5 10 15  
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala  
20 25 30  
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile  
35 40 45  
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala  
65 70 75 80  
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu  
85 90 95  
Thr Phe Gly Ala Gly  
100

<210> 42  
<211> 303

<212> DNA

<213> Mus musculus

<400> 42

```
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtc  ggatgtgagt actgctgtag cctgggtatca acagaaaacca 120
ggacaatctc ctaaactact gatttactcg gcatcctacc ggtacactgg agtccctgat 180
cgcttcactg gcagtggatc tgggacggat ttcactttca ccatcagcag tgtgcaggct 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcgggtgct 300
ggg                                                                 303
```

<210> 43

<211> 108

<212> PRT

<213> Mus musculus

<400> 43

```
Asp Val Gln Ile Thr Gln Ser Pro Ser Tyr Leu Ala Ala Ser Pro Gly
 1           5           10          15
Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
          20          25          30
Leu Ala Trp Tyr Gln Glu Lys Pro Gly Lys Thr Asn Lys Leu Leu Ile
          35          40          45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
          50          55          60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65          70          75          80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
          85          90          95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
          100          105
```

<210> 44

<211> 324

<212> DNA

<213> Mus musculus

<400> 44

```
gatgtccaga taacccagtc tccatcttat cttgctgcat ctccctggaga aaccattact 60
attaattgca gggcaagtaa gagcatttag aaatathtag cctgggtatca agagaaacct 120
gggaaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tgggtacagat ttcactctca ccatcagtag cctgggagcct 240
gaagattttg caatgtatta ctgtcaacag cataatgaat acccgtagac gttcggagggg 300
gggaccaagc tggaaataaa acgg                                                                 324
```

<210> 45

<211> 108

<212> PRT

<213> Mus musculus

<400> 45

```
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
 1           5           10          15
Glu Arg Val Ser Leu Thr Cys Arg Ala Ser Gln Asp Ile Gly Ser Ser
          20          25          30
Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly Thr Ile Lys Arg Leu Ile
```





accaagctgg agctgaaacg g

321

<210> 49

<211> 124

<212> PRT

<213> Homo sapiens

<400> 49

Glu	Val	Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Val	Gln	Pro	Gly	Gly	
1				5					10					15		
Ser	Leu	Arg	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Thr	Phe	Ser	Ser	Tyr	
			20					25					30			
Trp	Met	Thr	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Met	Val	
		35					40					45				
Ala	Asn	Ile	Lys	Lys	Asp	Gly	Ser	Glu	Lys	Ser	Tyr	Val	Asp	Ser	Val	
	50					55					60					
Lys	Gly	Arg	Phe	Thr	Thr	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr	
65					70				75					80		
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
			85					90					95			
Ala	Arg	Pro	Asn	Cys	Gly	Gly	Asp	Cys	Tyr	Leu	Pro	Trp	Tyr	Phe	Asp	
			100					105					110			
Leu	Trp	Gly	Arg	Gly	Thr	Leu	Val	Thr	Val	Ser	Ser					
		115					120									

<210> 50

<211> 372

<212> DNA

<213> Homo sapiens

<400> 50

gagggtgcagc	tggtggagtc	tggggggaggc	ttggtccagc	ctgggggggtc	cctgagactc	60
tcctgtgcag	cctctggatt	cacctttagt	agctattgga	tgacctgggt	ccgccaggct	120
ccagggaagg	ggctggagtg	ggtggccaac	ataaagaaag	atggaagtga	gaaatcctat	180
gtggactctg	tgaagggccg	attcaccacc	tccagagaca	acgccaagaa	ctcactgtat	240
ctgcaaata	acagcctgag	agccgaggac	acggctgtgt	attactgtgc	gagacccaat	300
tgtggtggtg	actgctat	accatgggtac	ttcgatctct	ggggccgtgg	caccctgggtc	360
actgtctcct	ca					372

<210> 51

<211> 122

<212> PRT

<213> Homo sapiens

<400> 51

Asp	Ile	Val	Met	Thr	Gln	Ser	Pro	Asp	Ser	Leu	Ala	Val	Ser	Leu	Gly	
1				5					10					15		
Glu	Arg	Ala	Thr	Ile	Asn	Cys	Lys	Ser	Ser	Gln	Ser	Val	Leu	Tyr	Ser	
			20					25					30			
Ser	Asn	Asn	Lys	Asn	Tyr	Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	
		35					40					45				
Pro	Pro	Lys	Leu	Leu	Ile	Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val	
	50					55					60					
Pro	Asp	Arg	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	
65					70				75					80		
Ile	Ser	Ser	Leu	Gln	Ala	Glu	Asp	Val	Ala	Val	Tyr	Tyr	Cys	Gln	Gln	

				85					90					95					
Tyr	Tyr	Asn	Thr	Pro	Gln	Ala	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile				
			100					105					110						
Lys	Arg	Thr	Val	Ala	Ala	Pro	Ser	Val	Phe										
		115					120												

<210> 52  
 <211> 366  
 <212> DNA  
 <213> Homo sapiens

<400> 52  
 gacatcgtga tgacccagtc tccagactcc ctggctgtgt ctctgggcga gagggccacc 60  
 atcaactgca agtccagcca gagtgtttta tacagctcca acaataagaa ctacttagct 120  
 tggtagcagc agaaaccagg acagcctcct aaactactca ttactgggc atctaccgg 180  
 gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240  
 atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttataatact 300  
 cctcaggcgt tcggccaagg gaccaaggtg gaaatcaaac gaactgtggc tgcaccatct 360  
 gtcttc 366

<210> 53  
 <211> 78  
 <212> DNA  
 <213> primerArtificial Sequence

<220>  
 <223> primer

<400> 53  
 actcccaagt cggctcgctt tctcttcagt gacaaacaca gacatagaac attcaccatg 60  
 ggatggagct gtatcact 78

<210> 54  
 <211> 47  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 54  
 actgactctc ttaattaaga ctcacctgag gagactgtga gagtggt 47

<210> 55  
 <211> 48  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> primer

<400> 55  
 ttggcgcgcc aaagactcag cctggacatg atgtcctctg ctcagttc 48

<210> 56  
 <211> 43

<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer

<400> 56  
atagtttagc ggccgcattc ttatctaaca ctctcccctg ttg 43

<210> 57  
<211> 155  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> synthetic

<400> 57  
gactcgggtcc gccagccac tggaagtcgc cgggtgtttcc attcgggtgat catcactgaa 60  
cacagaggac tcacccatgga gtttgggctg agctggggtt tcctcgttgc tcttttaaga 120  
gggtgtccagt gtcagggtgca gctgggtggag tctgg 155

<210> 58  
<211> 56  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> synthetic

<400> 58  
ccttaattaa gacctggaga ggccattctt acctgaggag acggtgacca gggttc 56

<210> 59  
<211> 36  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> synthetic

<400> 59  
ctagctagcg tcctaggtca gcccaaggct gcccc 36

<210> 60  
<211> 36  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> synthetic

<400> 60  
atagtttagc ggccgcacct atgaacattc tgtagg 36

<210> 61  
<211> 111

<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer

<400> 61  
ctagctagcc cgaatttcgg gacaatcttc atcatgacct gctccccctct cctcctcacc 60  
cttctcattc actgcacagg gtcctggggcc cagtctgtgt tgacgcagcc g 111

<210> 62  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer

<400> 62  
gggcagcctt gggctgagct aggacggtca gc 32

<210> 63  
<211> 393  
<212> DNA  
<213> Mus musculus

<400> 63  
atgatgtcct ctgctcagtt ccttggtctc ctggtgctct gttttcaagg taccagatgt 60  
gatatccaga tgacacagac tacatcctcc ctgctgcct ctctgggaga cagagtcacc 120  
atcagttgca gggcaagtca ggacattagc aattatttaa actgggtatca gcagaaacca 180  
gatggaactg ttaaactcct gatctactac acatcaagat tacactcagg agtcccatca 240  
aggttcagtg gcagtgggtc tggaacagat tattctctca ccattagcaa cctggagcaa 300  
gaagatattg ccacttactt ttgccaacag ggtaatacgc ttccgtggac gttcgggtgga 360  
ggcaccaagc tggaaatcaa acgggctgat gct 393

<210> 64  
<211> 131  
<212> PRT  
<213> Mus musculus

<400> 64  
Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Leu Cys Phe Gln  
1 5 10 15  
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser  
20 25 30  
Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp  
35 40 45  
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val  
50 55 60  
Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser  
65 70 75 80  
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser  
85 90 95  
Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn  
100 105 110  
Thr Leu Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
115 120 125

Ala Asp Ala  
130

<210> 65  
<211> 429  
<212> DNA  
<213> Mus musculus

<400> 65  
atgggatgga gctgtatcat cctcttttttg gtagcagcag ctacaggtgt ccactcccag 60  
gtccaactgc agcagcctgg gactgaactg gtgaagcctg gggcttcagt gaagctgtcc 120  
tgcaaggcctt ctggctacac cttcaccagc tactggatgc actgggtgaa gcagaggcct 180  
ggacaaggcc ttgagtggat tggaaatatt aatcctagca atggtggtac taactacaat 240  
gagaagttca agagcaaggc cacactgact gtagacaaat cctccagcac agcctacatg 300  
cagctcagca gcctgacatc tgaggactct gcggtctatt attgtgcaag acggggcccct 360  
tactacggtg gtaggaactt tgactactgg ggccaaggca ccactctcac agtctcctca 420  
gagagtcag 429

<210> 66  
<211> 143  
<212> PRT  
<213> Mus musculus

<400> 66  
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Ala Ala Thr Gly  
1 5 10 15  
Val His Ser Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Lys  
20 25 30  
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
35 40 45  
Thr Ser Tyr Trp Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu  
50 55 60  
Glu Trp Ile Gly Asn Ile Asn Pro Ser Asn Gly Gly Thr Asn Tyr Asn  
65 70 75 80  
Glu Lys Phe Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser  
85 90 95  
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val  
100 105 110  
Tyr Tyr Cys Ala Arg Arg Ala Pro Tyr Tyr Gly Ser Arg Asn Phe Asp  
115 120 125  
Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Glu Ser Gln  
130 135 140

<210> 67  
<211> 138  
<212> PRT  
<213> Mus musculus

<400> 67  
Met Gly Trp Arg Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly  
1 5 10 15  
Val His Cys Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys  
20 25 30  
Pro Gly Ala Leu Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
35 40 45

Thr	Ser	Tyr	Asp	Ile	Asn	Trp	Val	Lys	Gln	Arg	Pro	Gly	Gln	Gly	Leu
50						55					60				
Glu	Trp	Ile	Gly	Trp	Ile	Tyr	Pro	Gly	Asp	Gly	Ser	Thr	Lys	Tyr	Asn
65					70				75						80
Glu	Lys	Phe	Lys	Gly	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser
			85						90					95	
Thr	Ala	Tyr	Met	Gln	Leu	Ser	Ser	Leu	Thr	Ser	Glu	Asn	Ser	Ala	Val
			100					105					110		
Tyr	Phe	Cys	Ala	Arg	Gly	Ala	Arg	Phe	Tyr	Trp	Tyr	Phe	Asp	Val	Trp
		115					120					125			
Gly	Ala	Gly	Thr	Thr	Val	Thr	Val	Ser	Ser						
130						135									

<210> 68  
 <211> 135  
 <212> PRT  
 <213> Mus musculus

Met	Ala	Val	Leu	Gly	Leu	Leu	Phe	Cys	Leu	Val	Thr	Phe	Pro	Ser	Cys
1			5						10					15	
Val	Leu	Ser	Gln	Val	Gln	Leu	Lys	Gln	Ser	Gly	Pro	Gly	Leu	Val	Gln
			20					25					30		
Pro	Ser	Gln	Ser	Leu	Ser	Ile	Thr	Cys	Thr	Val	Ser	Gly	Phe	Ser	Leu
		35				40						45			
Thr	Ser	Tyr	Gly	Val	His	Trp	Val	Arg	Gln	Ser	Pro	Gly	Lys	Gly	Leu
50						55					60				
Glu	Trp	Leu	Gly	Val	Ile	Trp	Ser	Gly	Gly	Ser	Thr	Asp	Tyr	Asn	Ala
65					70				75						80
Ala	Phe	Ile	Ser	Arg	Leu	Ser	Ile	Ser	Lys	Asp	Asn	Ser	Lys	Ser	Gln
			85						90					95	
Val	Phe	Phe	Lys	Met	Asn	Ser	Leu	Gln	Ser	Asn	Asp	Thr	Ala	Ile	Tyr
			100					105					110		
Tyr	Cys	Ala	Arg	Asp	Cys	Gly	Ser	Arg	Gly	Asp	Tyr	Trp	Gly	Gln	Gly
		115					120					125			
Thr	Ser	Val	Thr	Val	Ser	Ser									
130						135									

<210> 69  
 <211> 143  
 <212> PRT  
 <213> Mus musculus

Met	Lys	Leu	Trp	Leu	Asn	Trp	Val	Phe	Leu	Leu	Thr	Leu	Leu	His	Gly
1				5					10					15	
Ile	Gln	Cys	Glu	Val	Lys	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Val	Gln
			20					25					30		
Pro	Gly	Gly	Ser	Leu	Arg	Leu	Ser	Cys	Ala	Thr	Ser	Gly	Phe	Thr	Phe
		35				40						45			
Ser	Asp	Phe	Tyr	Met	Glu	Trp	Val	Arg	Gln	Pro	Pro	Gly	Lys	Arg	Leu
50						55					60				
Glu	Trp	Ile	Ala	Ala	Ser	Arg	Asn	Lys	Ala	Asn	Asp	Tyr	Thr	Thr	Glu
65					70				75						80
Tyr	Ser	Ala	Ser	Val	Lys	Gly	Arg	Phe	Ile	Val	Ser	Arg	Asp	Thr	Ser



<210> 72  
 <211> 128  
 <212> PRT  
 <213> Mus musculus

<400> 72  
 Met Glu Ser Gln Ile Gln Val Phe Val Phe Val Phe Leu Trp Leu Ser  
 1 5 10 15  
 Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser  
 20 25 30  
 Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp  
 35 40 45  
 Val Ser Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro  
 50 55 60  
 Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp  
 65 70 75 80  
 Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser  
 85 90 95  
 Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr  
 100 105 110  
 Thr Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg  
 115 120 125

<210> 73  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> synthetic

<400> 73  
 actcccaagt cgggccgctt t 21

<210> 74  
 <211> 270  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> template

<400> 74  
 actcccaagt cgggccgctt tctcttcagt gacaaacaca gacatagaac attcaccatg 60  
 gagtttgggc tgacctggct ttctcttggt gctatttttag aaggtgtcca gtgtgaggtg 120  
 cagctggtgg agtctggggg aggccttggtc cagcctgggg ggtccctgag actctcctgt 180  
 gcagcctctg gattcacctt tagtagctat tggatgacct ggggccgcca ggctccaggg 240  
 aaggggctgg agtgggtggc caacataaag 270

<210> 75  
 <211> 266  
 <212> DNA  
 <213> Artificial Sequence



<220>

<223> template

<400> 75

```
ctggagtggg tggccaacat aaagaaagat ggaagtgaga aatcctatgt ggactctgtg 60
aagggccgat tcaccacctc cagagacaac gccaagaact cactgtatct gcaaataaac 120
agcctgagag ccgaggacac ggctgtgtat tactgtgcca gacccaattg tgggtggtgac 180
tgctatttac catggtactt cgatctctgg ggccgtggca ccctgggtcac tgtctcctca 240
ggtgagtctt aattaagaga gtcagt 266
```

<210> 76

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 76

```
actgactctc ttaattag 18
```

<210> 77

<211> 105

<212> DNA

<213> Artificial Sequence

<220>

<223> 5' primer with leader sequence

<400> 77

```
ctagctagct caagactcag cctggacatg gtgttgcaga cccaggtctt catttctctg 60
ttgctctgga tctctggtgc ctacggggac atcgtgatga cccag 105
```

<210> 78

<211> 105

<212> DNA

<213> Artificial Sequence

<220>

<223> 3' primer

<400> 78

```
ctagctagct caagactcag cctggacatg gtgttgcaga cccaggtctt catttctctg 60
ttgctctgga tctctggtgc ctacggggac atcgtgatga cccag 105
```

<210> 79

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> 5' primer

<400> 79

```
ctgatgctac gatggatccg cctccaccaa gggcccatc 39
```

<210> 80

<220>

<223> 5' primer

<400> 80

000